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January 22, 2004
5928-04-20016

U.S. Nuclear Regulatory Commission
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Three Mile Island Nuclear Station, Unit 1 (TMI Unit 1)
Facility Operating License No. DPR-50
NRC Docket No. 50-289

Subject: TMI Unit 1 Sixty-Day Response to NRC Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"

On February 11, 2003, the NRC issued NRC Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors." This Order requires the following information be submitted to the NRC within 60 days after returning the plant to operation:

"For each inspection required in Paragraph C, the Licensee shall submit a report detailing the inspection results within sixty (60) days after returning the plant to operation."

The Order also requires the following information be submitted to the NRC within 60 days after returning the plant to operation if a leak or boron deposit was found during the inspection:

"For each inspection required in Paragraph D, the Licensee shall submit a report detailing the inspection results within sixty (60) days after returning the plant to operation if a leak or boron deposit was found during the inspection."

Pursuant to 10 CFR 2.202, "Orders," Attachment 1 to this letter provides the TMI Unit 1 60-day response. This response is due to the NRC by February 3, 2004.

A101

Should you have any questions or desire additional information regarding this letter, please contact David J. Distel at (610) 765-5517.

I declare under penalty of perjury that the foregoing is true and correct.

Respectfully,

Executed on 01-22-04

Michael P. Gallagher
Director, Licensing and Regulatory Affairs
AmerGen Energy Company, LLC

Enclosure: Attachment 1, TMI Unit 1 Sixty-Day Response to NRC Order EA-03-009

cc: H. J. Miller, Administrator, USNRC Region I
D. M. Kern, USNRC Senior Resident Inspector, TMI Unit 1
D. M. Skay, USNRC Senior Project Manager, TMI Unit 1
File No. 02048

ATTACHMENT 1

Three Mile Island Unit 1

Sixty-Day Response to NRC Order EA-03-009

"Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"

Attachment 1

Three Mile Island Unit 1

Sixty-Day Response to NRC Order EA-03-009

On February 11, 2003, the NRC issued NRC Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors." Section E of this Order requires the following information be submitted to the NRC within 60 days after returning the plant to operation:

E. For each inspection required in Paragraph C, the Licensee shall submit a report detailing the inspection results within sixty (60) days after returning the plant to operation. For each inspection required in Paragraph D, the Licensee shall submit a report detailing the inspection results within sixty (60) days after returning the plant to operation if a leak or boron deposit was found during the inspection.

Response to NRC Order Item E Concerning Paragraph C

Paragraph C, Item 3 (i.e., for plants in the low primary water stress corrosion cracking (PWSCC) susceptibility category) of this Order requires the following inspections:

(3) For those plants in the Low category, [reactor pressure vessel] *RPV head and head penetration nozzle inspections shall be performed as follows. An inspection meeting the requirements of 3(a) must be completed at least every third refueling outage or every five (5) years, whichever occurs first. If an inspection meeting the requirements of 3(a) was not performed during the refueling outage immediately preceding the issuance of this Order, the Licensee must complete an inspection meeting the requirements of 3(a) within the first two (2) refueling outages following issuance of this Order. The requirements of 3(b) must be completed at least once over the course of five (5) years after the issuance of this Order and thereafter at least every four (4) refueling outages or every seven (7) years, whichever occurs first.*

(a) Bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle).

(b) Either:

(i) Ultrasonic testing of each RPV head penetration nozzle (i.e., nozzle base material) from two (2) inches above the J-groove weld to the bottom of the nozzle and an assessment to determine if leakage has occurred into the interference fit zone, OR

(ii) Eddy current testing or dye penetrant testing of the wetted surface of each J-Groove weld and RPV head penetration nozzle base material to at least two (2) inches above the J-groove weld.

A bare metal visual examination of the TMI Unit 1 new replacement RPV closure head, installed in the T1R15 refueling outage (Fall 2003), was performed prior to the TMI Unit 1 T1R15 refueling outage to meet the requirements of Item 3(a). The examination included the full circumference of each RPV head penetration nozzle (i.e., 69 control rod drive mechanism (CRDM) nozzles and the two thermocouple nozzles) and the RPV head surface to provide 100% coverage of the RPV head. No areas of degradation were observed.

The examination was performed in accordance with procedure ER-AA-335-014, "VT-1 Visual Examination." The inspection, performed by a VT-1 certified individual, used the direct examination method, and then repeated with a digital hand held camera to record the results.

The inspection to meet the requirements of Item 3(b) was also completed at this time. This inspection was performed to establish a baseline of the new replacement head, installed in the T1R15 refueling outage, for comparison to future refueling outage inspection results.

Ultrasonic testing (UT) examinations were performed on the 69 CRDM's at the J-Groove weld locations to provide TMI Unit 1 with a baseline of the condition of the CRDM nozzles. For all CRDM nozzle penetrations, the desired examination volume was the entire wall thickness of the nozzle base material. The axial extent of the examinations was 15 inches starting from the bottom of the nozzle underneath the RPV head and covering at least 2 inches above the J-Groove welds. Liquid penetrant examination was performed on the J-Groove welds with no reportable indications detected.

Due to the J-Groove welding processes, the two thermocouple nozzle tubes experienced shrinkage that prevented the performance of UT examinations. The two thermocouples were however inspected with currently available eddy current (ECT) techniques, to provide TMI Unit 1 with a baseline report of the condition of these welds. The axial extent of the examinations was 20 inches from the bottom of the nozzle underneath the RPV head including the welds.

<u>Response to NRC Order Item E Concerning Paragraph D</u>

Paragraph D required the following inspections:

D. During each refueling outage, visual inspections shall be performed to identify potential boric acid leaks from pressure-retaining components above the RPV head. For any plant with boron deposits on the surface of the RPV head or related insulation, discovered either during the inspections required by this Order or otherwise and regardless of the source of the deposit, before returning the plant to operation the Licensee shall perform inspections of the affected RPV head surface and penetrations appropriate to the conditions found to verify the integrity of the affected area and penetrations.

VT-2 certified examiners performed a visual inspection to identify potential boric acid leaks from pressure-retaining components above the RPV head. This inspection was performed during the ASME Section XI, examination

Category B-P, Item No. B15.10 System Leakage Test. Several minor vent tube leaks were identified and repaired prior to return to service. These leaks were above the RPV head insulation and minor in nature. No further evidence of boric acid leakage was found above the RPV head.